



# Urban soundscape design



# We are Hydrock

Committed to being a force for good.

**We take pride in making a positive contribution to the lives of the people who work for us, the communities we work in, our planet and for society as a whole.**

We believe in places, communities and infrastructure that everyone can be proud of.

As a leading integrated engineering design, energy and sustainability consultancy, we bring sustainable solutions to major infrastructure projects and landmark buildings across the UK.

At the heart of this is unlocking complex sites to create high-performing, future-proofed buildings and infrastructure, and making your ideas viable.

We are at the forefront of advising on how to improve the energy efficiency of buildings, identifying and costing opportunities to invest in energy generation, and helping clients respond to the focus placed on ESG factors by the investment community.



British owned integrated engineering design, energy and sustainability consultancy



With you from initial site due diligence, through planning support, detailed design, construction overview and handover



Specialists in sustainability and energy strategies; MEP and BREEAM; structural and civil design; fire engineering; site investigation and geotechnical design; air quality and acoustics; transport planning



Committed to be a net zero business by 2030



Signed up to the *Science Based Targets initiative* (SBTi)



Staff based in 20 key locations across the UK, including: London, Manchester, Leeds, Glasgow, Birmingham, Bristol, Cardiff and Southampton



Eight consecutive years in the *100 Best Large Companies to Work For*



A soundscape is defined as:

**The perception of a sound environment in context, and the inherent physical and emotional response.**

Essentially, soundscapes are one aspect of our everyday environment that is critical to the health and wellbeing of our communities. Without considering soundscape design during urban planning we are risking the sustainability and liveability of our cities.

# Why?

**A traditional approach to acoustics within planning dictates that complying with guideline noise levels creates a 'good habitable environment'.**

Should we be striving towards a 'good habitable environment'? Most people understand that this is an oversimplification and that being subjected to annoying sounds, even at low levels, can be just as stressful. Decibels are not proportional to wellbeing.

This is why a holistic approach must be adopted, where focus is directed towards the quality of the sound environment. With soundscape design as a key aspect in the master planning process, we can engineer our future towards maximising wellbeing and creating sustainable urban environments that will serve our communities well into the future.





# Decibels are not proportionate to wellbeing



## Functionality

Who is the space intended for? What is the function of community public open space? How can the soundscape be supportive or disruptive to the intended function? Which new spaces are compatible with, or complimentary to, existing acoustic features?

## Design

Soundscape design necessitates an interdisciplinary approach to the master planning process of the urban sound environment, including aspects such as traffic planning, landscaping, architectural design and ecology – effectively everyone involved in shaping our visual and aural environments.





---

## Vibrant public squares

A focus on art and culture can be used to create multi-functional public squares, and a destination for the wider community. Sounds from local independent businesses, bars and coffee shops can be positive in the right context, helping create an atmosphere. Exhibition and performance spaces are an important asset to local communities.



---

## Nurturing urban wildlife

A focus on wildlife, natural greenery and waterways. Consideration of biotopes can attract birds and other animals in to urban environments. Celebrate local wildlife while creating relaxing and stimulating environments for the community.







---

## Mental relaxation

Providing relaxing outdoor space is vital in boosting the liveability of urban areas in order to reduce the stress and anxiety that comes with urban life. Creating an appropriate balanced soundscape is key in harnessing the potential restorative qualities of urban greenspace rather than a simple change of scenery, creating a true wellbeing advantage; resulting in happier and more productive communities.



---

## Connectivity

Creating walkways and travel routes with appealing and engaging soundscapes can increase the interconnectivity of different urban districts.



# Changing the balance

Designing soundscapes involves changing the balance between background and foreground sounds and exploring how interventions can be used to divert attention towards positive sound environments.



## Variation

Strategic use of contrasting soundscapes can be used to enhance their respective differences and emphasise their qualities, such as making relatively quiet areas seem incredibly tranquil when adjacent to high density urban areas.

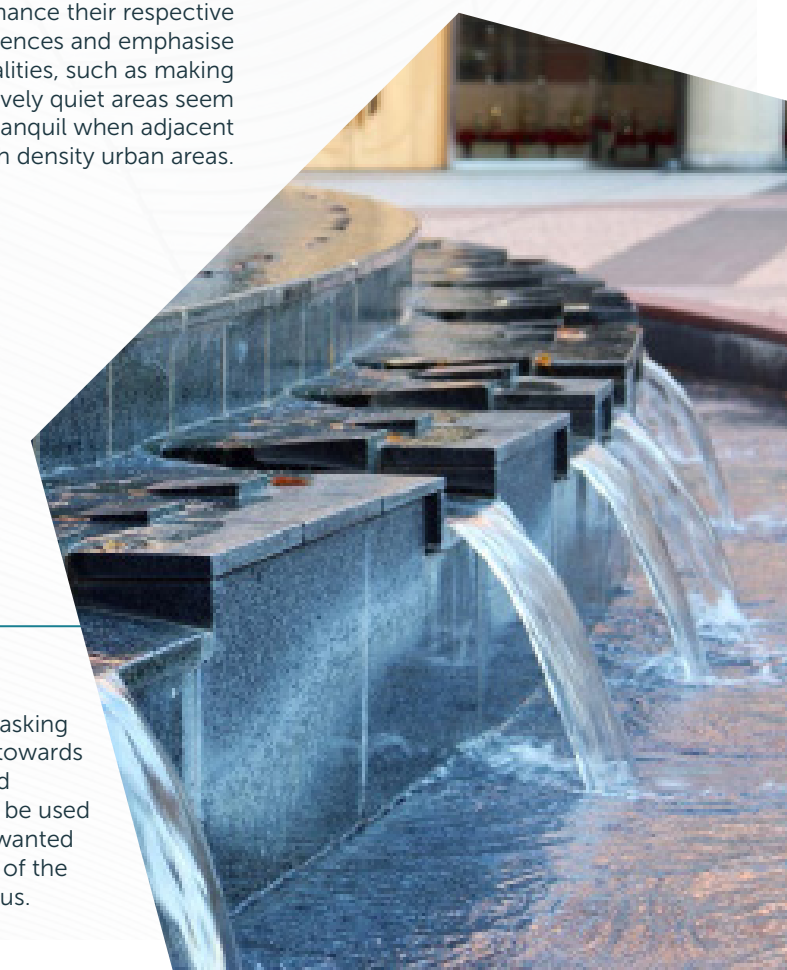


## Building screening

Strategically located buildings can be used effectively as acoustic and visual screens from unwanted noise sources. Harnessing wind tunnel effects created by buildings can emphasise the sound of wind flowing through vegetation.

## Masking

Introduction of auditory masking allows focus to be shifted towards wanted and pleasant sound features. This concept can be used to completely override unwanted sounds, grab the attention of the listener or subtly divert focus.







## Landscaping

The shaping of the landscape topography can be used to form hills, berms, strategically shielded valleys or areas which naturally enhance the sounds within. The use of vegetation and appropriate materials can have substantial effects.

## Reflection and resonance

Geometric design and material selection can be used to enhance the soundscape. Implementation around watercourses, meeting places and walking paths can enhance the character and function. In some applications, reflections can also constitute an experience of their own, offering a way to interact with the landscape.





---

## Atmospheric design

Introduction of loudspeakers can be used to design and enhance the atmosphere of urban spaces. The addition of low-level noise can divert attention from unwanted sounds or the use of music can help define the purpose of urban space.



---

## Sound sculptures

Sound sculptures are installations that include sound as an important and obvious feature. They can be used to create interactive and educational urban spaces.





## Example of concept application

A unique combination of acoustic screening and water feature simultaneously reduces noise from the outside of the park while introducing the pleasant sound of constant running water, masking road traffic noise and distracting visitors from the bustling city streets a stones throw away. The complete visual screening and interesting features provided by the installation further reinforces this concept, emphasising the contrasting soundscape to the outside environment.

Use of gravel pathways inside the park provides sensory feedback to people walking through, instantly distracting visitors from typical urban sounds, drawing attention to the greenspace in front of them.

A central area is landscaped to be reminiscent of an amphitheatre which provides multiple functions, such as shared public performance space for community theatre and music groups, a setting for local seasonal and cultural celebrations, and an opportunity for the local community to relax on a day to day basis. As well as creating a visual impact, the geometrical design of the performance area is purposefully used to help project sounds from within during performances, creating a sense of spaciousness.





# Our services

Big enough to deliver the complex, nimble enough to put you first.

## Mechanical, Electrical and Plumbing (MEP)

Influencing the performance of a building from the earliest conceptual stage, we focus on services that are simple, easy to use, create value and deliver comfort and well-being.

Our work includes renewable technologies, lighting design, utilities infrastructure, MEP procurement and building optimisation studies.

## Structural and Civil Engineering

Designing efficient, sustainable, resilient and high-functioning structures. Our work includes foundation and sub-structure design, basement and retaining wall design, modular and off-site design, and steel, timber, masonry and concrete building design.

Our civils works include access roads, car parks, on-and-off site highways, drainage systems, site levels and cut/fill analysis, and flood risk assessments and mitigation strategies.

## Geo-technical and Land Quality

Our site investigations and assessments help to understand ground and ground water conditions, and our geotechnical designs enable sites to realise their true value.

Our work includes Phase I desk studies, site investigations, remediation strategies, materials management plans, asbestos in soils consultancy, earthworks specification and regulatory approvals.

## Transport Planning

Analysing the strategic impact of proposed development and infrastructure, we deliver transport assessments, transport statements, travel plans, access and junction design, traffic modelling, road safety audits, Section 106 and 278 agreements and public consultations.

Our modelling team run assessments and analysis on the use and opportunity from EV charging.

## Fire Engineering

We deliver the optimal fire safety solutions during preconstruction and on completed and existing buildings.

We specialise in fire safety strategies, fire engineering design, multi-site fire risk assessments and the external wall fire review process.

## Smart Energy and Sustainability

We help clients at planning stage with their energy and sustainability commitments and we help clients navigate the energy landscape by selecting the right mix of technology for their development, with a focus on de-carbonisation, capacity, resilience, cost savings and revenue generation.

Key areas of expertise include: net-zero roadmaps; ESG strategies; carbon co-ordinator role; utility assessments and costings; battery storage solutions; and BREEAM and WELL assessments.

## Acoustics and Air Quality

We can deliver a 'soundscape' design appropriate to the masterplan vision and will support planning submissions with air quality audits and a range of environmental noise/vibration surveys and assessments.

Our acoustics capability extends into construction and demolition noise and vibration studies, transport noise studies, architectural acoustics, room acoustics and vibration isolation.



# Hydrock



[hydrock.com](https://www.hydrock.com)

ENGINEERING | ENERGY | SUSTAINABILITY